SASKATCHEWAN ADVANCED EDUCATION, EMPLOYMENT AND IMMIGRATION

SASKATCHEWAN WAGE SURVEY METHODOLOGY REPORT 2011

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Government of Saskatchewan

insightrix®

Report Compiled by

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BACKGROUND INFORMATION

In March 2011, the Ministry of Advanced Education, Employment, and Immigration (AEEI) contracted Insightrix Research, Inc. to conduct a wage survey of employers in Saskatchewan. This study was a follow-up to several wage studies of the Saskatchewan marketplace, the last of which was conducted in 2009.

The main objectives of this research are to:

- Employ a research methodology which can accurately capture a large amount of variable wage data among employers in Saskatchewan while being random, statistically sound, and representative of the distribution of employees in the province.
- Provide reliable, timely wage information for:
    - employers to enhance their competitiveness and attract and retain employees;
    - students and job seekers to have career information; and,
    - researchers and policy analysts to inform policy development.
- Provide wage information for the most common occupations in Saskatchewan; and
- Provide sub-provincial wage data (defined as Regina, Saskatoon, Regina CMA, Saskatoon CMA and the remainder of the province) for comparability.

PROJECT MANAGEMENT

Insightrix and the Ministry held regular project meetings from the commencement of this project. Meetings involved discussing project timelines, project assumptions, discussing the research methodology, data collection approaches, verification processes, and project updates. These meetings have been essential to ensure continuity of the project and to keep all parties aware of achieving various milestones and addressing any challenges faced by the Insightrix team. Additional communication between Insightrix and the Ministry allowed for the Ministry to follow the progress of the project reporting and to be directly involved in the creation and application of reporting rules.

Sample Approach

The purpose of this study is to collect employee wage data from businesses. The results are reported on by occupation using Statistics Canada's 2006 National Occupational Classification (NOC) codes. Please note that at the time of the study, the 2011 NOC codes were under review and were not able to be used in the analysis. As such, the sampling approach was based on occupations, rather than employers. Therefore, to ensure there was a representative sample of occupations being reported on, it was essential to know the number of people employed in various occupations and to randomly select businesses to participate based on their employee counts (i.e. probability proportional sampling technique). This sampling technique reflects the probability of each employer being selected based on the number of employees they have; therefore, businesses with a large number of employees had a greater chance to be selected for their participation. This guiding philosophy was utilized throughout the study design and set-up.

Sample Generation

Insightrix was provided the Workers' Compensation Board's (WCB) database of employers in the province. This database contained contact and industry information for the employers as well as an estimated FTE (full time equivalent) count based on the total payroll. Because the employee count was estimated in this database, Insightrix purchased an additional database from Dun & Bradstreet which contained contact and industry information as well as employee counts. Both databases were used to determine the large employers that Insightrix contacted for an in-person interview.

Groups that were excluded from the sample are as follows:

- Employers with a single employee (presumably the owner); and

- Employers in the Agriculture sector with fewer than three employees (to eliminate small farming operations from the sample).

A probability proportional sampling approach was used to determine the sample for this study based on the number of employees. Companies with a higher employee count had a higher likelihood of being selected than those with lower employee counts; however, each company listed in the database had a chance of being selected. In contrast to the 2009 survey, the sample was drawn to ensure that a proportional sample was drawn by industry and by head office locations. This was done to ensure the inclusion of business from smaller industry sectors. However, as with the 2009 study, quotas were not set by industry as this restriction would impede the random nature of the approach. Large employers who employ over 200 employees were taken out of the telephone sample and contacted directly by Insightrix. These considerations can be referenced in the Large Employers section.

Choosing Occupations

To make the survey easier to complete for respondents, Insightrix preselected a list of NOCs for respondents in each industry. A list of 300 target occupations was generated using the occupations in the province with highest number of employed persons. For each industry, a list of targeted occupations was generated by looking at the top 60 occupations with the highest number of employed persons within the industry which were also contained on the list of top occupations in the province. Occupations which were in the top 300 but not within the top 60 occupations of any one industry were added to the targeted occupation list for select industries. These occupations tend to have a low number of individuals who are employed in any one organization but are common across many industries, such as personnel and recruitment officers, payroll clerks, records management and filing clerks, personnel clerks, etc.

To make the survey easier to complete, respondents were asked to select the occupations that they wished to report on from the preselected list of 60 likeliest occupations. A full occupation description was given to respondents along with a list of other related occupations so that respondents could accurately classify their employees in the correct NOCs. Respondents were then only shown the full wage sheets for those that they had selected, as well as an additional sheet on which they were asked to list other occupations that had not been included in the list of preselected NOCs.

QUESTIONNAIRE DEVELOPMENT & INSTRUCTIONS

A questionnaire was developed by Insightrix, and was very similar to the questionnaire developed by Insightrix for the 2009 Saskatchewan Wage Survey. As with the 2009 study, the questionnaire was developed in an Excel worksheet format. In this worksheet, respondents selected their industry sector, and indicated whether their company has employees in Saskatoon, Regina or elsewhere in the province. Upon doing so, a worksheet was automatically pre-filled with the most likely occupations the employer would have on staff. They were then asked to select which of these occupations existed within their organization. This was established to remove the requirement for employers to search out and classify their staff into specific NOCs. If the employer employed a large number of individuals who did not fall within one of the pre-selected NOCs, blank worksheets were provided so they could document these individuals as well. During the verification process, respondents were called back and Insightrix staff verified these NOCs.

A thorough set of instructions were distributed to respondents to assist respondents in completing the Excel worksheet. This included:

- Instructions to complete the Excel sheet (5 Easy Steps);
- Alternate options for participating in the research (printing the work sheets and faxing, completing online, emailing the file, uploading the file to a secure FTP site or waiting for Insightrix to contact them by phone); and
- Detailed instruction manual needed for more detailed inquiries.

All information was distributed via mail to the randomly selected respondents. The Excel file and detailed instruction guide were burned onto CD's that respondents could insert into their computers to load the files. The project cover letter approved by the Ministry and the easy five step instruction sheet were printed and included in the mail out package. Contact information was provided in the packages so respondents could talk directly to an Insightrix staff member if there were questions or to ascertain the validity and confidentiality of the study.

Pre-testing

To ensure the Excel worksheet and supporting instructional information were sufficient for respondents to participate in the research, a selection of businesses were targeted to pre-test the survey instruments. A total of five organizations completed the pre-tests, offering valuable information to assist with enhancing the process.

DATA COLLECTION

Fielding began for the Saskatchewan Wage Survey on Wednesday, May 18th, 2011. A number of processes were established while the project was in the field in order to ensure the quality of data collection. Common errors in the process were discovered, addressed, and data was verified directly with respondents.

> *Reporting note:* Minimum wage for the study was considered to be a calculated $9.25 per hour. The provincial minimum wage was not adjusted to $9.50 per hour until after fielding for the study was completed. Cases for which the wage given was below the provincial minimum were contacted to verify the correct wage. In the cases where the wage could not be verified, cases are considered to be in error and are not included in the results. This was a very rare occurrence in the dataset; 42 cases with a wage below the provincial minimum were found out of over 113,000 employee wages.

Data Collection Methods

Mail-outs

Insightrix mailed out 6,210 packages to a random sample of businesses around the province. These mail-outs included an introductory cover letter, an abridged step-by-step instruction guide intended to be a quick reference, and a DVD-rom disc which included the data form sheet in an excel file, industry classification information, and a detailed instruction guide.

A template email was created that could be sent to respondents in order to supplement those who received the package with the information in a digital format and to provide information to those respondents who did not receive the mail-out package.

Telephone

For smaller employers, completion of the survey over the telephone was a common option. Respondents were able to relay their information directly over the phone to one of Insightrix's trained interviewers who would then enter the data into the database while receiving direction from the contact.

Faxing

Insightrix generated a set of documents intended exclusively for faxing, including specific instructions for those respondents who wished to both receive and submit their completed survey by fax. Documents were stripped of any colour and instructions were included. Reference numbers were included on the fax cover sheets to ensure proper entry into the results database.

Online Survey Link

A survey link provided to respondents allowed for the completion of the survey online through an internet browser. A unique survey link was automatically generated for each participant and directly tied to the specific respondent's contact information. Respondents were able to manually enter data into the online survey link at their discretion and could start, stop, and resume data entry at any time. When the respondent had completed the survey, the data would be automatically uploaded into the survey database. Any errors or data abnormalities were flagged for future data verification. An email was dispatched to Insightrix staff members working on the project to communicate the completion by the respondent.

Large Employers

Employers in the sample that had 200 or more employees were classified as large employers. These employers were taken out of the general sample and assigned to members of Insightrix's professional staff. Documentation and specialized instructions designed to appeal specifically to large employers were generated in order to make participation straightforward. Additionally, professional staff served as personal contacts and worked on a one on one basis with large employer contacts in order to provide additional assistance when required and to ensure participation.

Respondents who fit into this category were given the unique option to submit an export of their relevant wage information to Insightrix rather than manually completing the data form sheets. Insightrix staff then subsequently formatted and uploaded this data into the survey database. An example of a raw data export was created in order to assist large employers in formatting their data submission in a way that would be consistent with other results.

Salary Conversions

For the purposes of data collections and reporting, all wages were collected in hourly form. Respondents were asked to convert their salaries to an hourly format, by taking the annual salary and dividing this by the annual hours regularly worked in that position. For example, if an employee normally worked 37.5 hours and is paid $45,000 per year, to convert to an hourly rate by taking $45,000 divided by (37.5 hours per week X 52 weeks per year) = $23.08 per hour. This information and related example was provided to all respondents. When reporting hourly rate, respondents were directed to exclude bonuses, vacation pay, tips, retroactive payments, overtime, shift differentials, and any other special payments.

Telephone data collection staff were available to assist in salary conversions if respondents required any assistance.

RESPONSE RATES

The Saskatchewan Wage Survey, 2011 was implemented in the field on Monday, April 27th with 6,216 potential respondents being contacted. A number of processes were established while the project was in the field in order to ensure the quality of data collection. Common errors in the process were discovered, addressed, and data was verified directly with respondents.

In total, 1,461 unique respondents completed the wage survey in 2011. Data was collected on over 113,000 employees in the province of Saskatchewan. Within the established reporting rules, 324 unique NOCs are reported on.

The following table illustrates the overall response rate and sample makeup. Among sample determined to be valid, the response rate is 39.9%.

	Count	Percent
Surveys distributed (total contacts)	**6216**	**100.0%**
Wrong Number/Not in Service	405	6.5%
Not qualified/Not available	1144	18.4%
Duplicate Employer Entry	1002	16.1%
Total Valid Sample	**3665**	**59.0%**
Refusals	1164	18.7%
Total Completed Surveys	**1461**	**23.5%**
Valid Response Rate	**39.9%**	

Not-qualified: Employers which are no longer in business, do not have any employees, or do not have employees located in Saskatchewan.
Duplicate Employer Entry: Employers who may have had more than one location or more than one contact person in the sample.
Refusals: Employers who preferred not to participate.

Region	Number of responses	Percent
Saskatoon	375	25.7%
Regina	323	22.1%
Other in Saskatchewan	959	65.6%
CMA		
Saskatoon CMA	397	27.2%
Regina CMA	336	23.0%
Other in Saskatchewan	887	60.7%
Total	1461	100.0%

* A number of employers provided information for employees in more than one region of Saskatchewan. Individual region counts do not add up to the total number of completed surveys.

The following table displays the sampling approach breakdown of how each industry, represented by the North American Industry Classification (NAIC), was broken out and represented in the sample used. The sample percentage represents the proportion of businesses in each industry within the sample itself while the Dun and Bradstreet (D&B) percentage represents the proportion within each industry in the entire province. Occupational observations represent the number of unique occupations observed in each industry, while the number of employees represents how many unique employees were reported in each industry.

NAIC # and NAIC Code	Sample	Employer Responses			
	% of companies	Number of responses	% of responses	Occupational observations	Number of employees represented
11 Agriculture, forestry, fishing and hunting	2%	85	6%	56	1124
21 Mining and oil and gas extraction	1%	26	2%	81	1855
22 Utilities	0%	2	0%	50	2608
23 Construction	6%	118	8%	84	2849
31 - 33 Manufacturing	4%	112	8%	162	4777
41 Wholesale trade	6%	43	3%	65	802
44-45 Retail Trade	15%	309	21%	138	10072
48-49 Transportation and warehousing	4%	62	4%	112	2147
51 Information and cultural industries	1%	14	1%	76	2501
52 Finance and insurance	4%	58	4%	56	2818
53 Real estate and rental and leasing	2%	24	2%	52	517
54 Professional, scientific and technical services	6%	71	5%	126	1956
55 Management of companies and enterprises	0%	5	0%	21	215
56 Administrative and support, waste management and remediation services	10%	27	2%	61	1231
61 Educational services	4%	21	1%	124	8580
62 Health care and social assistance	7%	97	7%	121	3438
71 Arts, entertainment and recreation	2%	41	3%	75	3170
72 Accommodation and food services	6%	98	7%	55	2932
81 Other services (except public administration)	11%	178	12%	122	2064
91 Public administration	6%	70	5%	234	57519

COMMUNICATION WITH RESPONDENTS

Emails from Respondents

All respondents were encouraged to contact Insightrix professional staff directly through email with any questions, comments, or issues experienced while completing the survey. These emails were monitored daily by staff at Insightrix and emails were responded to in a timely manner. Completed Excel files were emailed to Insightrix, subsequently filed, and the data was then entered into the survey database.

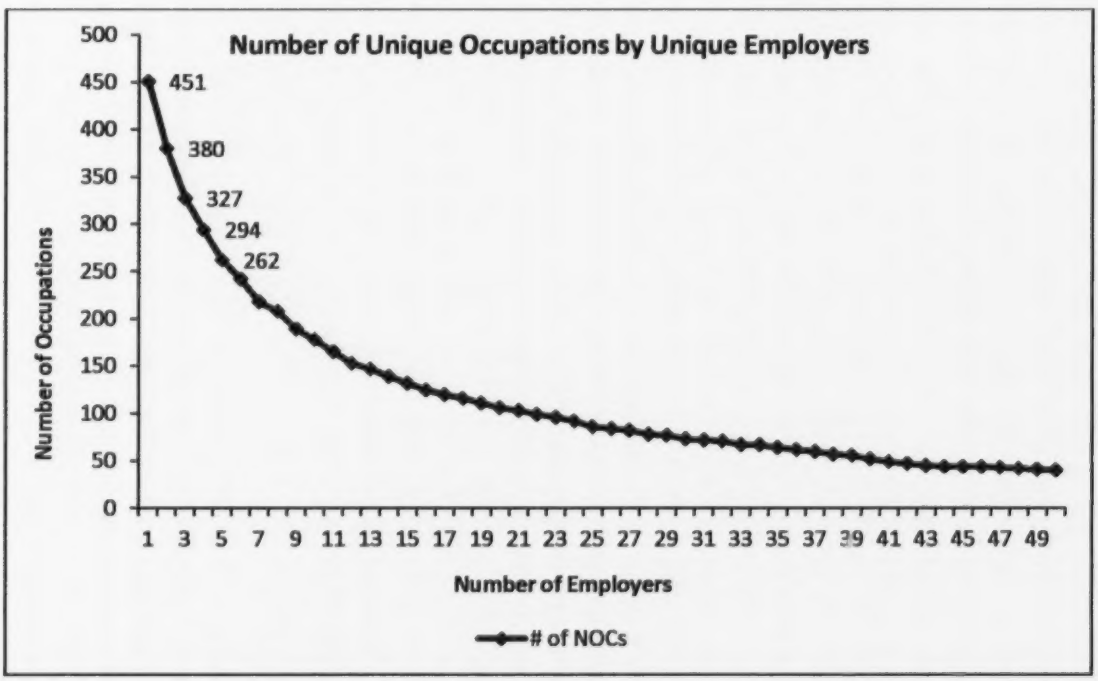
Phone Communication

A dedicated telephone number was established for wage survey communications. This phone was monitored and attended to on a daily basis during business hours and served to answer respondents' questions and address outstanding concerns.

Respondents were also contacted by phone if any verification of response data was required.

RESPONSE BREAKDOWN

In total, 1,461 unique respondents completed the wage survey in 2011. Data was collected on 113,309 employees representing 451 unique occupations in the province of Saskatchewan. The following chart illustrates the number of respondents that provided data for unique occupations, including the overall number of responses and the number of unique NOCs. With a few data exceptions, NOCs with three or more unique responses are reported. In the chart below, 451 unique occupations were reported on by at least one employer.



DATA VERIFICATION

Data verification continued throughout data collection, and continued until no data was left to verify on approximately September 30th. All responses were examined by staff at Insightrix and compared to a validation document which outlined the common errors respondents made.

Two different approaches for the verification process were practiced on respondents' data based on the methodology of data collection.

Hard Copy Submissions

- For responses where a hard copy of the survey data was available (i.e. data sheets submitted by e-mail or FTP to Insightrix), the hard copy was examined by hand for possible errors or omissions in consultation with the validation document. The respondent was subsequently contacted directly by an Insightrix staff member and asked for verification relating to the specific errors. Once all errors had been corrected and the response fully verified, the survey was closed off as complete.

Online Survey Submissions

- For responses that were filled in by respondents via the online survey link, an email was automatically dispatched to Insightrix staff outlining the completion of the survey and including the nature of any errors. These error emails were used in conjunction with a close examination of the survey responses to determine the nature of the errors and the appropriate verification processes that were required. Subsequent follow-up with respondents over the phone verified each individual response. Once all errors had been corrected and the response fully verified, the survey was closed off as complete.

Journeyperson

Insightrix generated a list of all occupations in the province for which a journeyperson certificate is available based on the occupations provided by the Saskatchewan Apprenticeship and Trade Certification Commission. In consultation with the Ministry, this list was finalized for reporting and all journeyperson occupations display the available journeyperson data.

Large Employers

Large employers who submitted unformatted, raw data to Insightrix had their data examined by Insightrix staff to ensure no errors were present. Due to the enormity of the data files submitted and the complexity of collecting this data, invalid data were removed from the dataset were not included when calculating the results.

REPORTING

Insightrix and the Ministry considered the privacy and confidentiality of the individual responses in all of the reporting considerations. Structured reporting rules were developed and established in order to ensure the largest amount of data could be reported while maintaining confidentiality.

Reporting and Data Suppression Considerations

NOC data is reported where there is equal to or greater than three unique employer responses for each occupation.

Data Suppression Rules

To ensure the confidentiality of respondents and their results, data suppression rules were established. These rules ensure that no single employee's wage will be able to be discerned within the greater data set.

For NOCs that have less than a total of 10 represented employees, all data is suppressed. All rows have similar suppression rules applied in order to maintain consistency. Additional considerations are noted below. Rules for all rows (i.e. Male, Female, Industry, Region, etc.) include:

- If a row has between 0 and 4 employees represented, only the total number of employees is displayed.
- If a row has between 5 and 9 employees represented, only the total, the median, and mean are displayed.
- If a row has between 10 and 19 employees represented, only the total, the high, the low, the median, and the mean are displayed.
- If a row has 20 employees or more represented then all fields are displayed (quartiles, high, low, median, mean, total).

All responses where the data provided was verified to be less than minimum wage are suppressed. Only 42 employee records in total fit into this category and were removed from the final results.

Industry

Industry data and comparisons within particular NOCs are included where three or more unique responses are reported within a specific industry. If there are less than three unique responses for a particular NOC, data for that industry is not displayed (except as noted in the "Union Considerations" section).

Union Considerations

In NOC cases with one or two unique respondents, where one of the unique respondents is classified as a large employer, data is reported in order to reflect the large proportion of employees within certain occupations in the province employed by single reporters. In order to maintain confidentiality, responses which represent non-unionized employees in this category are suppressed. Only unionized information is reported on due to the public nature of collective bargaining agreements. A minimum of fifty employees must be reported on to be displayed.

Journeyperson

A list of all NOCs in the province for which a journeyperson certificate is available was created and applied to the final data in order that:

- If a journeyperson certificate is available for a certain NOC, the number of journeyperson and the number of non-journeyperson fields will display.
- If no journeyperson certificate is available for a certain NOC, no journeyperson fields will display.

Region

Respondents were asked to indicate whether their employees work primarily in the City of Saskatoon, the City of Regina, or elsewhere in the province, and wages are reported by these three regions where possible. Employers who are located outside of the cities but within the Census Metropolitan Area (CMA) of Saskatoon or Regina are included in the results for Saskatoon CMA or Regina CMA where applicable.

Margin of Error and Data Grading Calculations

In order to represent the quality of the NOC data being reported on, a margin of error calculation was utilized. This formula takes into account the number of employees reported on within each NOC. This calculation was then used to grade the reliability of the individual NOC data as it relates to the other data in the completed report. This grade can be viewed on each NOC page.

$$E = 1.96\sqrt{\frac{.25}{n}}$$

Data Grades

Classification	Rating	Margin of Error Percentage
Excellent	A	0.0% – 4.9%
Good	B	5.0% - 9.9%
Fair	C	10.0% - 14.9%
Less Reliable	D	15.0% or more

Please note that the margin of error on each NOC was not corrected for finite population as no current data was available.

Additional Considerations

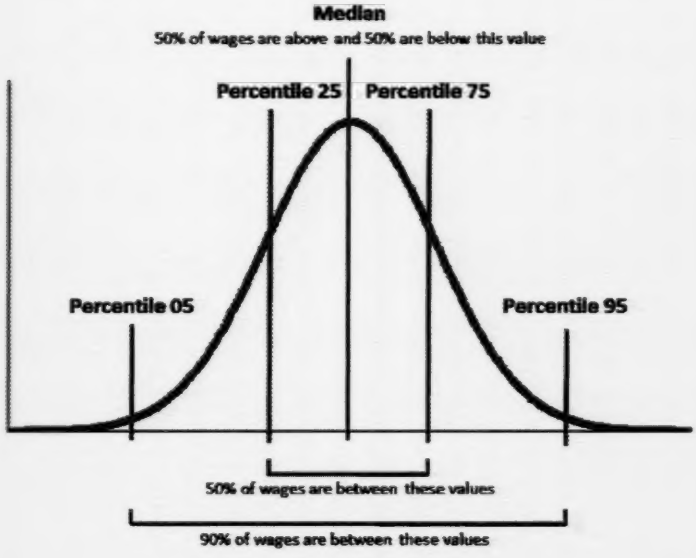
A number of respondents report that they had to participate in a national wage survey for Statistics Canada during the time the study was in the field. This national study is mandatory for respondents to complete and some contacts refused to participate in the provincial study based on their participation in the national study.

How to Interpret the Wage 2011 Report

The following term definitions are used to report on the occupational wage data contained in the full Wage 2011 report:

Low	Lowest reported wage for that occupation
High	Highest reported wage for that occupation
Mean	Equally weighted mean (average) reported wage for that occupation. The mean is calculated as the average of all employees reported on, regardless of the relative size of employers reporting within the category.
Median	50% of reported wages are below this value and 50% are above
Percentile 05	5% of wages are below this value and 95% are above
Percentile 25	25% of wages are below this value and 75% are above
Percentile 75	75% of wages are below this value and 25% are above
Percentile 95	95% of wages are below this value and 5% are above

The following graph illustrates the normal distribution of values relative to the median. The distribution of wage rates between each of the percentiles is also described.


Median
50% of wages are above and 50% are below this value
Percentile 25
Percentile 75
Percentile 05
Percentile 95
50% of wages are between these values
90% of wages are between these values

APPENDIX A: TERMS AND DEFINITIONS

Occupation (4-Digit NOC):
Occupations in the 2011 Saskatchewan Wage Survey are established by classifications established by the 2006 National Occupation Classification (NOC) system. Each occupation is reported at the four-digit NOC level.

Occupational Observation:
A single occupation case reported by a single employer. A specific occupation reported by an employer was only reported once, regardless of how many employees an employer has in that occupation.

Industry:
Industry in the 2011 Saskatchewan Wage Survey is established by classifications by the Canadian 2007 North American Industry Classification System (NAICS).

Region:
Regional comparisons are provided for Saskatoon urban, Regina urban, and the rest of Saskatchewan. Based on the location of employers around Saskatoon or Regina, some employers were classified into Saskatoon and Regina Consolidated Metropolitan Areas (CMA). This CMA comparison was provided for Saskatoon CMA, Regina CMA, and the rest of Saskatchewan.

Employer:
A private or public sector person or business that employs one or more persons for wage compensation. Employers with 3 or more employees were targeted for this survey during sample preparation.

Employee:
A person who works for another person or business. Employees in the 2011 Wage survey must be receiving a wage from an employer to be included.

Full-time Employee:
An employee who works an average of 30 hours per week or more, excluding overtime.

Part-time Employee:
An employee who works an average of less than 30 hours per week.

Journeyperson:
A person who is working in a trade occupation. The 2011 Saskatchewan Wage Survey allowed employers to provide data for trade occupations where a journeyperson certification is available.